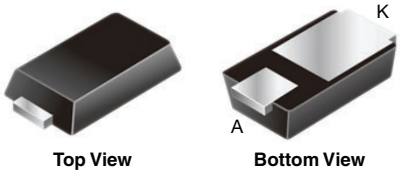
# Surface-Mount Schottky Barrier Rectifiers

**eSMP® Series**




Top View Bottom View

**MicroSMP (DO-219AD)**




## FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available

RoHS COMPLIANT HALOGEN FREE

## LINKS TO ADDITIONAL RESOURCES

3D Models

## TYPICAL APPLICATIONS

For use in low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 1.0 A |
| $V_{RRM}$ | 50 V, 60 V |
| $I_{FSM}$ | 25 A |
| $V_F$ at $I_F$ = 1.0 A | 0.52 V |
| $T_J$ max. | 150 °C |
| Package | MicroSMP (DO-219AD) |
| Circuit configuration | Single |

## MECHANICAL DATA

**Case:** MicroSMP (DO-219AD)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade
Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified
("_X" denotes revision code e.g. A, B,...)

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes the cathode end

| **MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted) | | | | |
|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MSS1P5** | **MSS1P6** | **UNIT** |
| Device marking code | | 15 | 16 | |
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 50 | 60 | V |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 1.0 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 25 | | A |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | -55 to +150 | | °C |


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| ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | | **SYMBOL** | **TYP.** | **MAX.** | **UNIT** |
| Maximum instantaneous forward voltage | $I_F$ = 0.5 A | $T_J$ = 25 °C | $V_F$ (1) | 0.45 | - | V |
| | $I_F$ = 1.0 A | | | 0.56 | 0.68 | |
| | $I_F$ = 0.5 A | $T_J$ = 125 °C | | 0.40 | - | |
| | $I_F$ = 1.0 A | | | 0.52 | 0.60 | |
| Maximum reverse current | Rated $V_R$ | $T_J$ = 25 °C | $I_R$ (2) | 20 | 150 | µA |
| | | $T_J$ = 125 °C | | 7.0 | 12 | mA |
| Typical junction capacitance | 4.0 V, 1 MHz | | $C_J$ | 40 | - | pF |

**Notes**

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | |
|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MSS1P5** | **MSS1P6** | **UNIT** |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 125 | | °C/W |
| | $R_{\theta JL}$ (1) | 30 | | |
| | $R_{\theta JC}$ (1) | 40 | | |

**Note**

(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 6.0 mm x 6.0 mm copper pad areas $R_{\theta JL}$ is measured at the terminal of cathode band. $R_{\theta JC}$ is measured at the top center of the body

| ORDERING INFORMATION (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| MSS1P6-M3/89A | 0.006 | 89A | 4500 | 7" diameter plastic tape and reel |
| MSS1P6HM3_A/H (1) | 0.006 | H | 4500 | 7" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25°C unless otherwise noted)

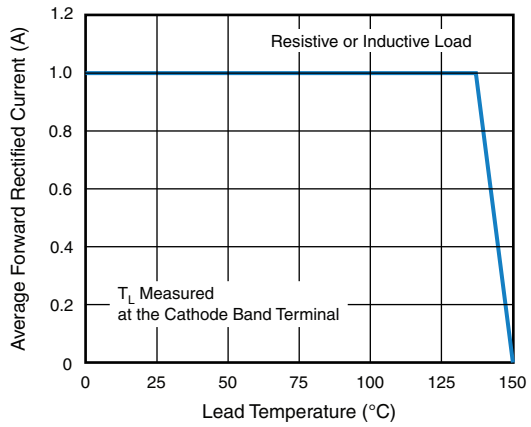



Fig. 1 - Maximum Forward Current Derating Curve

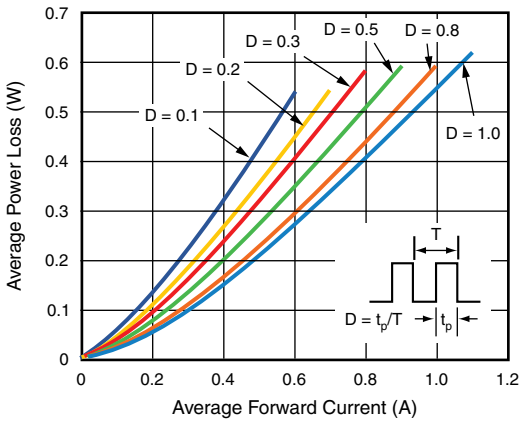



Fig. 2 - Forward Power Loss Characteristics


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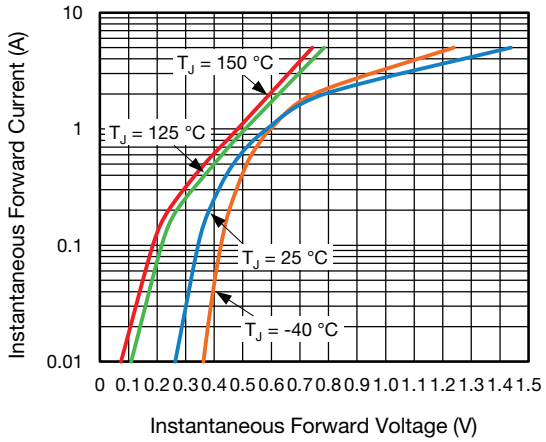



Fig. 3 - Typical Instantaneous Forward Characteristics

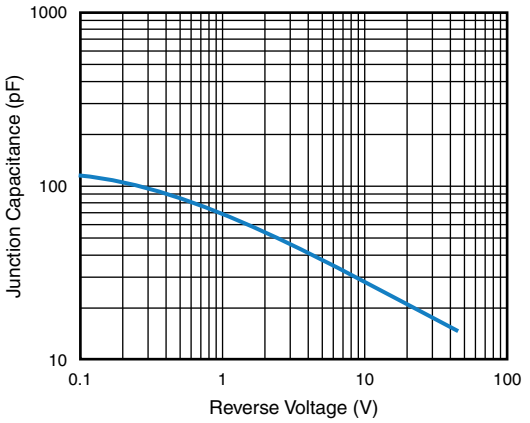



Fig. 5 - Typical Junction Capacitance

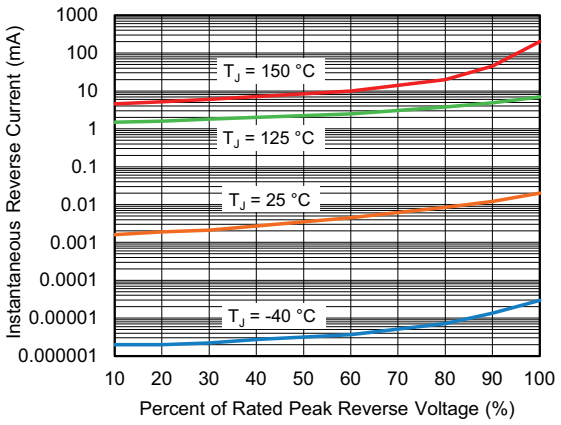



Fig. 4 - Typical Reverse Characteristics

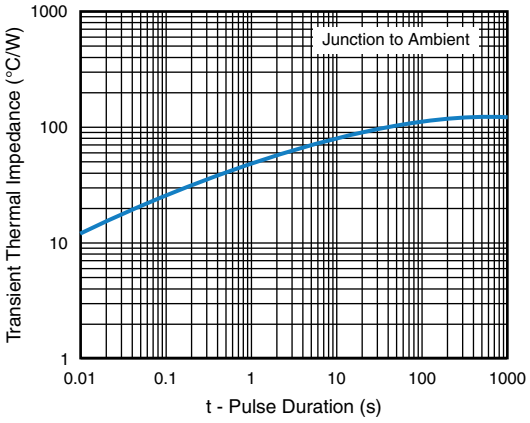
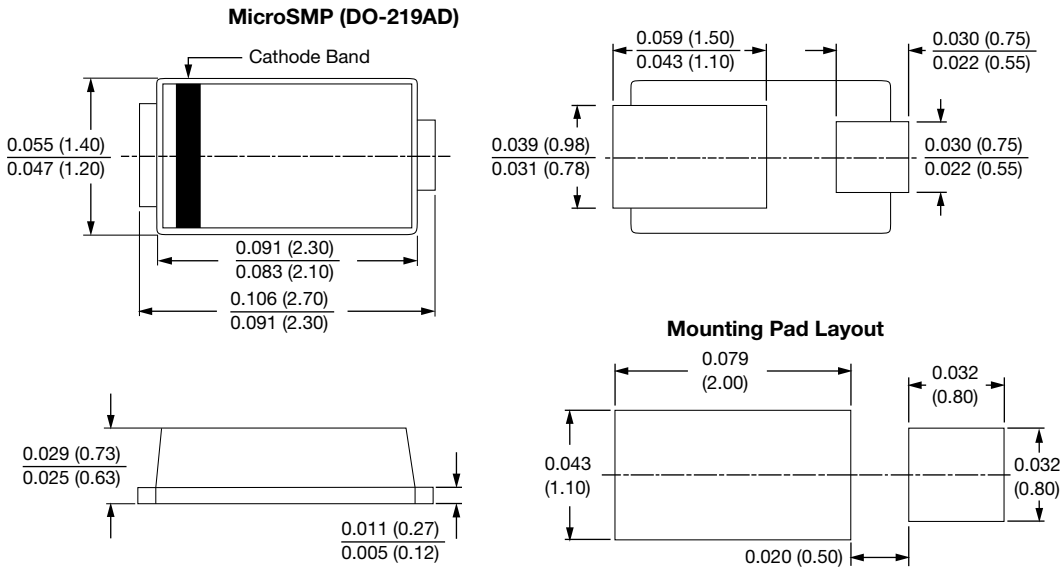



Fig. 6 - Typical Transient Thermal Impedance

## **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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